

Attorney's Docket: 2002DE433
Application Serial Number 10/676,962
Filed 10/01/2003
Further Preliminary Amendment

This listing of claims will replace all prior versions, and listings of claims in the application:

1.(Currently Amended) A continuous process for preparing an additive mixture for improving cold flow properties of mineral oils and mineral oil distillates, said additive mixture comprising

- A) a cold flow improver for middle distillates, and at least one further component comprising
- B) a further cold flow improver, and/or
- C) an organic solvent,

said process comprising mixing the cold flow improver having a viscosity below 5000 mPas ~~[[and]]~~ and the at least one further component in a static mixer to provide the additive mixture at an outlet temperature of the static mixer being from 0°C to ~~[[100]]~~90°C.

2.(Previously Presented) The process of claim 1, wherein the outlet temperature is from 30 to 90°C.

3.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises at least one copolymer of ethylene and further ethylenically unsaturated comonomers.

4.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises at least one oil-soluble polar nitrogen compound.

5.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises at least one comb polymer.

Attorney's Docket: 2002DE433
Application Serial Number 10/676,962
Filed 10/01/2003
Further Preliminary Amendment

- 6.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises at least one alkylphenol-aldehyde resin.
- 7.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises at least one polyoxyalkylene derivative.
- 8.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises at least one olefin copolymer.
- 9.(Previously Presented) The process of claim 1, wherein the static mixer comprises a helical mixer having helical element groups having from 2 to 200 mixing elements.
- 10.(Previously Presented) The process, wherein the static mixer has a mixing zone having a relative mixer-L/D of from 2 to 50, where L is length and D is the diameter of mixing zone.
- 11.(Previously Presented) The process of claim 10, wherein a pressure drop over the mixing zone is less than 10 bar.
- 12.(Previously Presented) The process of claim 1, wherein a mixing time is less than 60 s.
- 13.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises a terpolymer which, apart from ethylene, contains from 0.1 to 12 mol%, of vinyl neononanoate or of vinyl neodecanoate, and from 3.5 to 20 mol%, of vinyl acetate, and a total comonomer content is between 8 and 21 mol%.

Attorney's Docket: 2002DE433
Application Serial Number 10/676,962
Filed 10/01/2003
Further Preliminary Amendment

14.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises a terpolymer which, apart from ethylene and from 8 to 18 mol% of vinyl esters, also contains from 0.5 to 10 mol% of olefins selected from the group consisting of propene, butene, isobutylene, hexene, 4-methylpentene, octene, diisobutylene, norbornene, and mixtures thereof.

15.(Previously Presented) An additive mixture prepared according to the process

16.(Currently Amended) A fuel oil comprising a mineral oil or a mineral oil distillate and the additive mixture of claim 1.

17.(Previously Presented) The process of claim 1, wherein the outlet temperature of the additive mixture at the outlet of the static mixer is from 50 to 85°C

18.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises a terpolymer which, apart from ethylene, contains from 0.2 to 5 mol %, of vinyl neononanoate or of vinyl neodecanoate, and from 3.5 to 12 mol%, of vinyl acetate, and a total comonomer content is between 8 and 21 mol%.

19.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises a terpolymer which, apart from ethylene, contains from 0.2 to 5 mol%, of vinyl neononanoate or of vinyl neodecanoate, and from 8 to 15 mol%, of vinyl acetate, and the total comonomer content is between 12 and 18 mol %.

20.(Previously Presented) The process of claim 1, wherein the cold flow improver comprises a terpolymer which, apart from ethylene, contains from 0.1 to 12 mol%, of vinyl neononanoate or of vinyl neodecanoate, and from 8 to 15 mol%, of vinyl acetate, and the total comonomer content is between 12 and 18 mol %.

Attorney's Docket: 2002DE433
Application Serial Number 10/676,862
Filed 10/01/2003
Further Preliminary Amendment

21.(Currently Amended) A process for the preparation of an additive mixture, said process comprising passing a cold flow improver to a static mixer and therein mixing the cold flow improver with a further cold flow improver selected from the group consisting of a further ethylene copolymer, an oil-soluble polar nitrogen compound, a comb polymer, an alkylphenol aldehyde resin, a polyoxyalkylene derivative, an olefin copolymer, an organic solvent, and mixtures thereof, wherein the cold flow improver and the further cold flow improver is a copolymer of ethylene and at least one olefinically unsaturated compound, said cold flow improver having a viscosity below 5000 mPas, the static mixer having from 2 to 200 mixing elements and said static mixer having an outlet temperature ranging from ~~30 °C to 90 °C~~ 30°C to 90°C to provide said additive mixture.

22.(Currently Amended) The process of claim 21, wherein the olefinically unsaturated compound is selected from the group consisting of a vinyl ester, an acrylic ester, a methacrylic ester, an alkyl vinyl ether, an alkene, and mixtures thereof. ~~(Is this sufficient? How should we add substituted by one or more hydroxyl groups, does this only apply to the alkenes?)~~

23.(Previously Presented) The process of claim 22, wherein the olefinically unsaturated compound have alkyl groups which are substituted by one or more hydroxyl groups.

24.(Previously Presented) The process of claim 21 wherein the mixing elements are helical mixing elements.